

REMARKS/ARGUMENTS

For the convenience of the Examiner and clarity of purpose, Applicant has reprinted the substance of the Office Action in *10-point bolded and italicized font*. Applicant's arguments immediately follow in regular font.

I. Rejection under 35 U.S.C. § 102

4. Claims 7, 13, 21-26 and 28-31 were rejected under 35 U.S.C. § 102(b) as being anticipated by Coe (U.S. 3,149,666).

Coe shows a heat sink having a tubular body with a plurality of internal fins extending symmetric around the center of the interior of the tubular body, the internal fins having varying lengths with the fins in the center of set are longer than the fins at the edge of the set, an exterior surface having a substantially flat surface with a mounting ridge (22) which is capable of being mounting a clip to hold a component against the substantially flat portion, the exterior surface with a plurality of exterior fins extending from the exterior surface, and a fan positioned adjacent to an open end of the tubular body.

Applicant respectfully traverses the rejection of claims 7, 13, 21-26 and 28-31. For a prior art reference to anticipate in terms of 35 U.S.C. § 102, every element of the claimed invention must be identically shown in a single reference. *Diversitech Corp. v. Century Steps, Inc.*, 850 F.2d 675, 677, 7 U.S.P.Q.2d 1315, 1317 (Fed. Cir. 1988). Inherent anticipation requires that the missing descriptive material is necessarily present, not merely probably or possibly present in the prior art. *In re Robertson*, 169 F.3d 743, 49 USPQ.2d 1949 (Fed. Cir. 1999).

Coe does not teach, show, or suggest every element of the presently claimed invention. Coe teaches a cooler device that includes a plurality of thermally conductive elements (22, 24, 26, 28, 30 and 32) oriented about a central tube (20); see, Figures 1, 3 and 4. The Examiner has suggested that Coe shows an exterior surface with a substantially flat surface with a mounting ridge (22) which is capable of being mounted to a clip to hold a component against the flat

portion. Applicant wishes to respectfully point out that the Examiner is in error, in that (22) in Coe is one of a plurality of sectional cross sections which surround tube 20 (see, Column 2, lines 22-25). Applicant believes that the Examiner meant to refer to platforms/supports 66 which “form an integral part of each of the sectorial members”, each of which is provided with a small hole (68). These supports (66) are described to be provided to carry the semiconductor devices to be cooled by the invention (see, Column 3, lines 28-35; FIG. 1).

The present invention describes a heat sink assembly (20, 30) for cooling a component, such as a component on a circuit board, that specifically comprises a tubular body formed from a single extrusion of thermally conductive material, wherein the heat sink has a mounting ridge for mounting a clip to hold the component to be cooled in a substantially perpendicular orientation with respect to the flat portion of the tubular body. This aspect is recited in each of the independent claims 7, 13, 20, 21 and 32, and is illustrated clearly in FIG. 2 of the application, wherein circuit board (18) is illustrated to be mounted in a substantially perpendicular manner to a flat portion (32) of the heat sink assembly (20) via clips (36) and the integrally-formed mounting ridge (34).

Applicants claimed invention is not the same as, or identical to, the cooler described by Coe. First, the cooler described and claimed by Coe comprises a tube and a plurality of quadrant-shaped members of high thermal conductivity. As described above, Applicants claimed heat sink is comprised of a tubular body formed from a single extrusion of thermally conductive material. Additionally, the supports/platforms (66) described by Coe to carry semiconductor devices would necessarily, as evidenced by the position of the attachment holes (68) in the center of each support, orient the mounted semiconductor generally parallel to the

platform. This is not the same as, or equivalent to, the substantially perpendicular mounting orientation of the component to be cooled by the Applicant's presently claimed heat sink.

Similarly, because independent claims 7, 13, and 21, upon which claims 22-26 and 28-31 depend, have been distinguished above regarding Coe, it is believed that these claims are deemed allowable by depending upon allowable independent claims.

As every element of the claimed invention is not identically shown or suggested by Coe, Applicant respectfully requests that the rejections of claims 7, 13, 21-26 and 28-31 under 35 U.S.C. § 102(b) be withdrawn.

II. Rejection under 35 U.S.C. § 103

6. Claims 20, 32, 36, 37, 41 and 42 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Campbell (US 6,339,212) in view of Goetz et al. (US 5,717,189), Gandre et al. (US 5,828,549), and Earl et al. (US Patent No. 5,304,735).

Campbell shows the cooktop claimed including a cooking plate, a plurality of heating units and a controller mounted below the cooking plate, a circuit box having a plurality of electronic components, and a heat sink to cool down the electronic components. However, Campbell does not explicitly show the circuit board and further does not show the claimed heat sink assembly.

Goetz [sic] shows a cooktop having a cooking plate with burners that are controlled by the electronic components that provided with the printed circuit boards. In view of Goetz, it would have been obvious to one of ordinary skill in the art to provide the electronic components of Campbell on a circuit board since such circuit board is well known and conventional in the art to create the necessary control circuitry.

Gandre shows a heat sink having a tubular body with a substantially flat exterior surface, a plurality of internal fins extending from the interior surface of the heat sink, a plurality of external fins extending from the exterior surface, a fan positioned adjacent to an open end of the tubular body, and a circuit board attached to the tubular body to cool down the circuit board. Earl shows a heat sink having an exterior surface with a mounting ridge to mount a control board with a clip. Thus, in view of Gandre and Earl, it would have been obvious to one of ordinary skill in the art to adapt Campbell, as modified by Goetz, with the heat sink having a mounting ridge to more securely attach the circuit board.

Applicant respectfully traverses this rejection of claims 20, 32, 36, 37, 41 and 42. According to MPEP § 706.02(j), for a claim to be obvious, there must be a) a suggestion or

motivation to combine reference teachings, b) a reasonable expectation of success, and c) the references must teach all of the claim limitations, *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). The Examiner has not identified any teaching or suggestion with the cited art of reference for combining the references in the manner suggested by the Examiner.

None of the cited references suggest combining the teachings. Furthermore, the cited references do not teach all of the claim limitations for pending claims 20, 32, 36, 37, 41 and 42. Specifically, none of the cited references, alone or in combination, a cooktop comprising a heat sink assembly for cooling a plurality of components of the circuit board, wherein the heat sink comprises a tubular body formed from a single extrusion of thermally conductive material, a plurality of internal fins extending from the interior of the tubular body, and a mounting ridge for mounting a clip to hold the component to be cooled substantially perpendicularly against the flat portion of a side of the tubular body, as recited in independent claims 20 and 32.

None of these features are taught or suggested by Campbell, Goest, Gandre, or Earl, alone or in combination. Campbell describes a cooking appliance having a burner box and a control box spaced below the burner box, wherein the control box has a plurality of fins formed on one wall for cooling the electronics of the control box. Goetz describes an electronic control arrangement for an electric heating appliance, such as a cooktop. No suggestion for the use of, or the features of, a heat sink are offered by Goetz.

Gandre describes a combination heat sink and air duct for cooling processors in computers with a flow of air. As specifically described within the specification, and in reference to FIG. 2, the heatsink (26a) described by Gandre has a base (32a) with a bottom surface (36a). "The bottom surface 36a extends across and covers the heat generating CPU 14a and is attached thereto using a conventional method..." (col. 3, lines 39-42). The heat sink is devoid of a

mounting ridge for attaching the processor board to the heat sink. Additionally, the arrangement described and claimed does not allow for the mounting of the component to be cooled in a substantially perpendicular manner against a flat portion of the exterior of the heat sink. Rather, the bottom surface 36a is mounted directly atop the heat generating component (14a) in a parallel fashion (see, FIG. 2). Additionally, no mention or suggestion is made of mounting the component to be cooled in a substantially perpendicular manner against a flat portion of the exterior of a heat sink. This feature of the Applicant's claimed invention is clearly missing.

Earl describes a heat sink for an electronic pin grid array. The heat sink 10 having a series of parallel, outwardly-facing fins 12, is attached to a pin array 30 adapted to receive a semiconductor on the face opposite the heat sink. As illustrated in FIG. 2, heat sink 10 has a pair of grooves 14, 16 disposed along opposite sides of the heat sink, bounded along their entire length by a pair of lips 18, 20. Clips 40 can be disposed within grooves 14,16 on the heat sink, and thereby allow the heat sink 10 to be attached directly above (parallel to) the pin grid array, sandwiching them together in a parallel fashion (see, FIG. 1). This is not the same as, or equivalent to, Applicant's claimed invention. Similarly, no mention or suggestion is made of attaching the component to be cooled perpendicular to the exterior of the heat sink by the use of the clips and grooves described by Earl.

As indicated above, none of the cited references describe or suggest a cook-top having a heat sink, wherein the heat sink has at least a portion of the exterior surface being substantially flat, and a mounting ridge for mounting a clip to hold the component substantially perpendicularly against the substantially flat portion of the tubular body. Further, none of the references offer a suggestion or motivation to combine in a manner which would result in the Applicants invention. Specifically, in the event that one were to combine the cited references, at

best one would obtain a cook-top having an electronic controller and a heat sink, wherein the controller would be cooled by a heat-sink mounted atop (parallel to) the controller. This is not the same as, or equivalent to, the Applicants currently claimed invention. It would not be obvious to have a heat sink with a mounting ridge for mounting a component to be cooled in a substantially perpendicular manner against a substantially flat exterior portion of the heat sink, as offered by Applicant's currently claimed invention.

Similarly, because independent claim 32, upon which claims 36, 37, 41 and 42 depend, has been distinguished above regarding Campbell, Goetz, Gandre and Earl, it is believed that these claims are deemed allowable by depending upon allowable independent claims.

Accordingly, Applicant respectfully requests that the rejections of claims 20, 32, 36, 37, 41 and 42 under 35 U.S.C. § 103 be withdrawn.

7. Claims 33-35, 39 and 40 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Campbell in view of Goetz, Gandre and Earl as applied to claims 20, 32, 36, 37, 41 and 42 above, and further in view of Coe or McAdam et al. (US 3,277,346).

Campbell in view of Goetz, Gandre and Earl shows the cooktop claimed except the internal fins being symmetric around the center of the tubular body with the center fins longer than the edge fins.

Coe and McAdam show a tubular heat sink with a plurality of internal fins extending symmetric around the center of the interior of the tubular body and the internal fins further having varying lengths with the center fins of a set having longer lengths than the edge fins of the set. In view of Coe or McAdam, it would have been obvious to one of ordinary skill in the art to adapt Campbell, as modified by Goetz, Gandre and Earl, with the claimed internal fins to more effectively provide the heat convection away from the electronic circuit components.

Applicant respectfully traverses this rejection of claims 33-35, 39 and 40. First, independent claim 32, upon which claims 33-35 and 39 depend, and independent claim 20 (upon which claims 39-40 depend) have been distinguished above regarding Campbell, Goetz, Gandre, and Earl. Coe has been described in detail above, and as detailed previously, lacks the claimed

features of a heat sink having a tubular body formed from a single extrusion of thermally conductive material, wherein the heat sink has a mounting ridge for mounting a clip to hold a component substantially perpendicular against a flat portion of the tubular body.

McAdam describes a cooler package and housing for electronic components, the housing of which (11) “advantageously...has a polygonal cross-sectional shape...in the form of a hexagon having six sides 14, 15, 16, 17, 18 and 19.” (column 2, lines 50-53; Figure 2). This cooler package is assembled from a plurality of units into a module, arranged in polygonal (e.g., hexagonal) relationship (see, column 3, lines 39-41; Figure 2). A cooler housing that is hexagonal (or polygonal) in cross-sectional shape and is assembled from a plurality of separate units is not the same as or equivalent to the claimed heat sink assembly or cook top described and claimed in the present invention, having a tubular body formed from a single extrusion of thermally conductive material. In fact, McAdam describes heat sinks which are specifically non-tubular in body shape, such as hexagonal and triagonal, and in that sense teaches away from the formation of a tubular body for a heat sink (see, column 3, lines 2-5). Further, the cooler package described by McAdam is devoid of mounting ridges for mounting a clip to hold the component to be cooled in a substantially perpendicular orientation against the flat portion of the tubular body.

As described above, claims 33-35 depend from independent claim 32, which Applicant has indicated above to be unobvious in view of Campbell, Goetz, Gandre, and Earl. Coe has been distinguished above. Similarly, McAdam does not teach or suggest a heat sink that is the same as, or equivalent to, the heat sink of independent claim 32. Nor does McAdam suggest combining any of the cited references to obtain a cooktop the same as or equivalent to Applicant’s claimed cooktop assembly. In the event that McAdam was combined with any or all

of the cited references, Applicant's claimed invention would not result, as the heating unit attached to the circuit board for the controller would be formed from a plurality of units into a hexagonal module, and would not have a mounting ridge for mounting the circuit board to the cooling unit.

Additionally, because claims 33-35 depend from independent claim 32, and because claims 39 and 40 depend from independent claim 20, and because Applicant contends that amended claims 20 and 32 are patentable over Campbell, Goetz, Gandre, Earl in view of Coe and/or McAdam, no amendment is made herein to claims 33-35 or 39-40. Reconsideration of this rejection in light of these arguments is appreciated.

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CONCLUSIONS

Of the original claims, claims 7, 13, 20, 21 and 32 have been amended with this communication. With this response, claims 7, 13, 20-26, 28-37, and 39-42 are now pending.

Claims 7, 13, 20, 21, and 32 have been amended to more clearly describe the present invention. More specifically, they have been amended to detail that the heat sink for cooling a component comprises a tubular body formed from a single extrusion of thermally conductive material, and that the heat sink has a mounting ridge for mounting a clip to hold the component to be cooled substantially perpendicularly against the substantially flat portion of the tubular body. Support for these amendments can be found in the specification as filed at page 5, line 31 to page 6, line 1; page 6, lines 3-7; as well as FIGs 2, 5 and 6 of the specification as filed. Applicant contends that these amendments to the claims do not constitute new matter.

The specification has been amended to correct a typographical error. Specifically, the reference to FIG. 4 on page 6, lines 16-23, erroneously made reference to FIG. 3. This has been

corrected with this communication. Applicant contends that this amendment does not constitute the addition of new matter.

Applicant has requested and paid the fees for a one-month extension of time for which to file a reply to the outstanding office action in a separate paper, enclosed herewith. No further fees are believed to be due in association with this application at this time. However, should any fees under 37 C.F.R. §§ 1.16 to 1.21 be required for any reason relating to this document, the Commissioner is authorized to deduct the fees from Locke Liddell & Sapp LLP Deposit Account No. 12-1322, referencing matter number 021987-013US.

Applicant thanks the Examiner for his consideration and effort on this matter, and submits that this application is now in condition for allowance. Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

The Examiner is encouraged to call the undersigned should any further action be required for allowance.

Respectfully submitted,



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